Fall 9-1-2021

GEO 201.01: Geologic Evolution of North America

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GEO 201 01, Geologic History of North America
Fall Semester 2021 Syllabus

Lecture: Monday, Wednesday, and Friday; 11:00 to 11:50 AM; CHCB 348

Laboratory: Tuesday; 11:00 AM to 11:50 PM; CHCB 333

Professor: Marc S. Hendrix; office hours are from 1:00 to 2:00 PM on Monday and Wednesday; other times by appointment. Office is CHCB # 363; cell phone 406-544-0780; marc.hendrix@umontana.edu

Text: *Earth System History,* 4th edition by Stephen M. Stanley and John A. Luczaj, 2015, ISBN 1-4292-5526-9, W.H. Freeman and Company

Laboratory Manual: *Interpreting Earth History*, 8th edition by Scott Ritter and Morris Peterson, 2015, ISBN 1-4786-1145-6, Waveland Press, Inc.

Course Outcomes: The goal is to provide you with a basic understanding of the processes responsible for evolution of the Earth System through time, with specific emphasis on the North American geologic record. The course is divided into two parts. The first, which represents about 55-60% of the lecture time, focuses on examining the dynamic interplay among Earth's geological, hydrological, and biological systems and developing a basic knowledge of the concepts, methods, and evidence geoscientists use to interpret the geologic record of these processes in the ancient past. The second is applying these concepts and methods to examine North America's geologic record of tectonism, surface environment, climate, and biodiversity through time.

Prerequisites: There are no prerequisites for this class per se. Basic knowledge of algebra and the introductory principles of physics and chemistry, however, is helpful as are basic computer skills.

Lecture, attendance, and format: Attendance is required. Ideas and materials are presented in the lectures that are not covered in the course text. You will be held accountable for all ideas and materials covered in the text and presented in lecture. The format is a traditional lecture, although I will ask you questions frequently to verify that you understand/comprehend materials as they are being presented.

Laboratory attendance: Attendance is required. Laboratories are on Tuesdays, are interactive, and graded. All lab exercises are due at the beginning of class one week after the exercise is assigned, so at the beginning of class each Tuesdays.

Moodle Supplement: Lecture PowerPoints, lecture recordings, and lab assignments will be posted on Moodle as will exam review materials and all official communications related to the course. All lectures in this class will be recorded live and uploaded to the course Moodle page following the end of the lecture.

Lecture topics, Lab Exercises, and Assigned Text Reading:

Part 1: Materials, Processes, and Principles

8/30	*Earth as a System*	Chapter 1
8/31	**Relative Dating and Unconformities**	**Lab Exercise 1**
9/1	*Earth as a System*	Chapter 1
9/3	*Minerals and Rocks*	Chapter 2
9/6	**No Class – Labor Day Holiday**	
9/7	**Radiometric Dating**	**Lab Exercise 2**
9/8	*Minerals and Rocks, cont.*	Chapter 2
9/10	*Diversity of Life*	Chapter 3
	On-line quiz #1, covers Chapters 1-2	
9/13	*Diversity of Life, cont.*	
9/14	**Analysis of Sedimentary Rocks**	**Lab Exercise 3**
9/15	*Environments and Life*	Chapter 4
	On-line quiz #2, covers Chapter 3	
9/17	*Sedimentary Environments*	Chapter 5
9/20	*Sedimentary Environments, cont.*	
9/21	**Depositional Environments**	**Lab Exercise 4**
9/22	**First Exam (covers Ch. 1-5)**	
9/24	*Correlation and dating of the rock record*	Chapter 6
9/27	*Organic Evolution*	Chapter 7
9/28	**Stratigraphy**	**Lab Exercise 5**
9/29	*Plate Tectonics*	Chapter 8
	On-line quiz #3, covers Chapters 6-7	
10/1	*Tectonics and Mountain Chains*	Chapter 9
10/4	*Chemical Cycles*	Chapter 10
10/5	**Physical Correlation**	**Lab Exercise 6**
10/6	*Chemical Cycles*	
	On-line quiz #4, covers Chapters 8-9	

Part 2: The North American Geologic Record

10/8	*The Hadean and Archean*	Chapter 11
10/11	*The Proterozoic*	Chapter 12
10/12	**Facies Relationships and Sea-Level**	**Lab Exercise 7**
10/13	**Second Exam (covers Ch. 1-10)**	
10/15	*Early Paleozoic*	Chapter 13
10/18	*Early Paleozoic cont.*	Chapter 14
10/19	**Fossils and Fossilization**	**Lab Exercise 8**
10/20	*Middle Paleozoic*	

	On-line quiz #5, Chapters 11-12	
10/22	NO CLASS – Hendrix out of office	
10/25	NO CLASS – Hendrix out of office	
10/26	**Evidence of Evolution**	**Lab Exercise 9**
	Index fossils and Depositional Sequences	**Lab Exercise 12**
10/27	*Middle Paleozoic, cont.*	Chapter 15
10/29	L*ate Paleozoic*	
11/1	Hendrix out *-Late Paleozoic, cont. - pre-recorded lecture*	
11/2	**Hendrix out - continue work on Labs 9 and 12**	
11/3	**Hendrix out - Third Exam (covers Ch. 1-15)**	
11/5	Hendrix out - L*ate Paleozoic, cont.- pre-recorded lecture*	
11/8	*Early Mesozoic*	Chapter 16
11/9	**Interpretation of Geological Maps**	**Lab Exercise 13**
11/10	*Early Mesozoic, cont.*	
11/12	*The Cretaceous*	Chapter 17
11/15	*The Cretaceous, cont.*	Chapter 17
11/16	**Paleozoic Orogenies of North America**	**Lab Exercise 15**
	Cordilleran Orogeny	**Lab Exercise 16**
11/17	*The Cretaceous, cont.*	Chapter 17
	On-line Quiz #6, covers Chapter 16	
11/19	T*he Paleogene*	Chapter 18
11/22	*The Paleogene*	
	On-line quiz #9	
11/23	**Phanerozoic Geology of North America**	**Lab Exercise 17**
	Cenozoic Geology	**Lab Exercise 18**
	Pleistocene Glaciation	**Lab Exercise 19**
11/24	NO CLASS – Thanksgiving Holiday	
11/26	NO CLASS – Thanksgiving Holiday	
11/29	T*he Neogene*	Chapter 19
11/30	**Continued work on Labs 17, 18, and 19**	
12/1	*The Neogene, cont.*	
	On-line Quiz #7, covers Chapters 17 and 18	
12/3	*The Holocene*	
12/6	*The Holocene, cont.*	
12/7	**Labs 17, 18, 19 all due at end of class – hard deadline.**	
12/8	Review of lecture material for final exam	
12/10	Review of Labs 17, 18, and 19	

Final Exam is Thursday, December 16 from 8:00-10:00am. The final exam will be comprehensive.

Course Grade: Individual exam letter grades and final letter grades will be based on the following percentages of correct responses: 100-90% A, 89-80% B, 79-70% C, 69-60% D, 59% and below F. Plus and minus scores will be assigned to letter grades following university guidelines. **All exams and labs will be counted in determining the final grade in the course.** The weighting to determine the final letter grade is as follows:

% of Final Grade	
48	Laboratory Exercises (16 at 3% each)
14	On-line quizzes, (7 @ 2% each)
6	First exam
10	Second exam
10	Third exam
12	Final exam
100	Total % for the entire course

Laboratory Exercises: All laboratory exercises are graded. Each weekly exercise counts as 3% of your final grade. Labs occur on every Tuesday of the fall semester and are shown in red on the schedule above. Completed lab exercises must be turned in at the beginning of class on Tuesday, one week after the lab is assigned. Late labs will not be accepted. Be very careful to answer every assigned question so as to receive complete credit for that lab. (Incomplete labs are a common source of point loss.)

On-line quizzes: Seven on-line quizzes will be given throughout the semester on those weeks in which we do not have a regularly-scheduled exam. Each on-line quiz will open on Wednesday noon directly after class and will close the next day, Thursday, at midnight. Thus, each quiz will remain open for 1.5 days until it closes. Each quiz will consist of 20 questions that will be a mix of multiple choice (15 questions) and True/False (5 questions). You will be able to take the quiz only once, and once you start you will have one hour to finish before the quiz will close.

Exams: All exams will be administered by Moodle. The three exams during the semester will be given on the scheduled day, will open at the beginning of the class period for that day, and will remain open for 24 hours before closing at noon the next day. **Midterm exams will be comprehensive, but will focus on the course material covered since the last midterm.** Failure to take a midterm exam at the scheduled time will result in a grade of zero (0)**,** unless prior arrangements are made with the professor or a signed medical excuse from the attending physician is presented to the professor.

The final exam is comprehensive from the beginning of the course, and the exam period will last for two hours. It is scheduled for **Thursday, December 16 from 8:00 – 10:00am.** Failure to take a final exam at the scheduled time will result in a grade of **zero (0),** unless prior arrangements are made with the professor or a signed medical excuse from the attending physician is presented to the professor.

Exam questions types are true or false, fill in the blank, matching, short answer/essay, diagram and graph analysis, and short problem solving. Prior to each exam, a set of study materials will be posted to the moodle site. These materials will include a study guide and a copy of exams given in this class in prior years.

STUDENT CONDUCT CODE: Please be familiar with the UM Student Conduct Code. The Student Conduct Code can be found on the Vice President for Student Affairs website: https://www.umt.edu/student-affairs/community-standards/default.php

Course Accommodations (DSS): Students with disabilities will receive reasonable accommodations in this course. To request course modifications, please contact me as soon as possible. I will work with Disability Services in the accommodation process. For more information, visit the Disability Services website (https://www.umt.edu/dss/) or call 406.243.2243 (Voice/Text).

Covid-19 mitigation during class activities:

1) Mask use is required within the classroom. View UM's face covering policy.

2) Each student is provided with a Healthy Griz kit. We expect students to clean their personal work space when they arrive for class, and before they leave the classroom.

3) Refill stations for cleaning supplies/hand sanitizer will be set up around campus - please learn where they are and use them.

4) Classrooms may have one-way entrances / exits to minimize crowding.

5) Students are discouraged from congregating outside the classroom before and after class.

6) Instructors should assign seating to ensure social distancing and take attendance to support contact tracing efforts.

7) Instructors should not allow more students in their classrooms at any time, for any reason, than the maximum approved capacity.

8) Additional seating should not be added to classrooms.

9) Drinking liquids and eating food (which requires mask removal) is strongly discouraged within the classroom.

10) Stay home and contact the Curry Health Center at (406) 243-4330 if you feel sick and/or if exhibiting COVID-19 symptoms.

11) If you are diagnosed with COVID-19, follow instructions for quarantine and contact your advisor so they can help you stay on track academically.

12) Students, please remain vigilant outside the classroom and help mitigate the spread of COVID-19.